

United States Department of Agriculture
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A LABORATORY METHOD FOR THE STUDY OF INSECTS IN THEIR COCOONS

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In many studies of insects it is essential to make daily observations on the development of larvae and pupae in their cocoons without disturbing them. A cocooning rack for this purpose was devised by E. R. Van Leeuwen,¹ and later a similar rack was devised by Rodney Cecil.² However, these racks are rather large and could not be used in desiccators for studying the effect of humidity on larvae and pupae of the pink bollworm (Pectinophora gossypiella (Saund.)) in their cocoons. The method devised to overcome this difficulty may be useful to other workers in the study of insects that spin cocoons during their development.

Method and Procedure

As shown in figure 1, larvae are permitted to spin up between the bottom surface of a petri dish and a thin disc of absorbent cotton. This cotton disc can be easily made by stripping a thin layer from a roll of absorbent cotton obtained in a drug store. A disc of toilet tissue is placed over the cotton disc. These discs are cut to fit the inner surface of the dish.

From 30 to 50 larvae are placed in the dish and given a few shakes to distribute them somewhat evenly over the surface. The disc of absorbent cotton is quickly placed over the larvae, and then the disc of toilet tissue is placed over the cotton disc. A heavy cardboard disc is placed over the other two discs, and a light weight is placed on top. The cardboard and weight act as a thigmotropic stimulus to the larvae in spinning their cocoons. Soon after the larvae start to spin their cocoons, the weight and disc of cardboard are removed.

¹ Siegler, E. H., and Plank, H. K. Life history of the codling moth in the Grand Valley of Colorado. U. S. Dept. Agr. Bull. 932, 119 pp. Sept. 1921.

² Cecil, Rodney. A cocooning rack. Bur. Ent. and Pl. Quar., ET-94 (multigraphed). March 1937.

In the studies made by the writer very few larvae left their cocoons when exposed to various high or low temperatures or a wide range in humidity.

If individual records are desired, each insect can be numbered by the use of India ink on the outside bottom surface of the petri dish. A tight-fitting lid of copper screen can be substituted for the glass cover of the petri dish, if desired.

From figure 1 it will be noted that the various stages of the insect can be easily recognized without disturbing them when the dish is held up to the light.



Figure 1.--Spin-ups of the pink bollworm between the bottom surface of a petri dish and a thin disc of absorbent cotton.

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